
Sissejuhatus informaatikasse

1983-1989: Graafiline kasutajaliides, mälu üle 64 KB

- Apple Lisa
- Apple Macintosh
- IBM kloonid
- MS Word, Windows planned
- Unix: System V, X-Windows, Gnu projekt

1983 main highlights

- Apple introduced its **Lisa**. The first personal computer with a graphical user interface, its development was central in the move to such systems for personal computers.
- Compaq Computer Corp. introduced **first PC clone** that used the same software as the IBM PC.
- **Oracle** got its name (renamed from “Relational Software”)
- **Unix system V** version, **C++** language, **Turbo Pascal**, **MS Word**
- The **Musical Instrument Digital Interface** was introduced at the first North American Music Manufacturers show in Los Angeles.

1983: LISA

- **Apple Computer officially unveils the Lisa computer.** It features a 5-MHz 68000 microprocessor, 1MB RAM, 2MB ROM, a 12-inch B/W monitor, 720x364 graphics, dual 5.25-inch 860KB floppy drives, and a 5MB Profile hard drive. It is slow, but innovative. Its initial price is US\$10,000. The Lisa cost Apple Computer US\$50 million to develop. It is the first personal computer with a graphical user interface (GUI). The software for it cost Apple Computer US\$100 million to develop. "Lisa" stands for Local Integrated Software Architecture. During its lifetime, 100,000 units are produced.
- Quote by Steve Jobs, of Apple Computer, "We're prepared to live with Lisa for the next ten years."

1983: Oracle corporation: SQL databases etc

- 1974-1979: **IBM System/R project** gives **SQL language** for database manipulation and queries. **SQL invented by IBM.** Ideas: **70-72 Codd.**
- **1977** Relational Software Inc. (RSI - currently Oracle Corporation) established: **Ellison and Miner.**
- 1978 Oracle V1 ran on **PDP-11** under RSX, 128 KB max memory. Written in assembly language. Implementation separated Oracle code and user code. Oracle V1 was never officially released.
- 1980 Oracle V2 released on DEC PDP-11 machine. Still written in PDP-11 assembly language, but now ran under Vax/VMS.
- 1982 Oracle V3 released, Oracle became the first DBMS to run on mainframes, minicomputers, and PC's. Code was written in C.
- **1983 Relational Software Inc. changed its name to Oracle Corporation.**



1983: other important software

Big machines:

- AT&T announces **UNIX System V**.
- AT&T Bell Labs designs **C++**.

Small machines:

- Lotus Development ships **Lotus 1-2-3** Release 1.0 for MS-DOS. Functions: **spreadsheet+database+graphics**. US\$1 million was spent on promoting the release. It requires 256KB of RAM, more than any microcomputer program at the time. Jonathan Sachs was the programmer, with Mitch Kapor as the software designer.
- Borland International is founded by Philippe Kahn. Borland International releases **Turbo Pascal** for CP/M and 8086-based computers.

- AT&T announces UNIX System V.
- Apple Computer introduces the Apple IIe. It features 64KB RAM, Applesoft BASIC, upper/lower case keyboard, seven expansion slots, 40x24 and 80x24 text, 1-MHz 6502 processor, up to 560x192 graphics, 140KB 5.25-inch floppy drive, Apple DOS 3.3, for US\$1400.
- Lotus Development ships Lotus 1-2-3 Release 1.0 for MS-DOS. US\$1 million was spent on promoting the release. It requires 256KB of RAM, more than any microcomputer program at the time. Jonathan Sachs was the programmer, with Mitch Kapor as the software designer.
- IBM announces the IBM PC XT. It adds a 10 MB hard drive, three more expansion slots, and a serial interface. With 128KB RAM and a 360KB floppy drive, it costs US\$5000.
- Microsoft announces MS-DOS 2.0 for PCs. It was written from scratch, supporting 10 MB hard drives, a tree-structured file system, and 360 KB floppy disks.

- Microsoft introduces XENIX 3.0.
- Microsoft introduces Multi-Tool Word for DOS (later renamed Microsoft Word) word processing program at Spring Comdex in Atlanta, Georgia.
- John Sculley is hired at Apple Computer as Chief Operating Officer.
- Microsoft gives a "smoke-and-mirrors" demonstration of Interface Manager (later called Windows), which consists entirely of overlapping windows, appearing to be running programs simultaneously.
- At the NCC, Jerry Pournelle (popular writer in Byte magazine) gives his predictions about computer technology in the year 1988: RAM would be 30 cents/KB, all microcomputers would have at least 1MB RAM, 10 MB hard drives would be common, operating systems would be in ROM chips, hard drive space would cost under 5 cents/KB, letter quality printers would cost US\$1000-1500, combination laser printer/ copy machines would be US\$2000, full business-quality computers would cost \$1000, and all televisions would include computers.

- The one millionth Apple II is made.
- Microsoft, SpectraVideo, and 14 Japanese computer companies announce the MSX specifications for low-end, 8-bit home computers systems. The standard is Zilog Z80, TI TMS9918A video processor, General Instruments AY-8910 sound processor, NEC cassette interface chip, Atari joystick interface, 64 KB RAM, Microsoft's 32 KB ROM-based extended BASIC.
- AT&T Bell Labs designs C++.
- Steve Wozniak returns to Apple Computer.



- Microsoft formally announces Microsoft Windows, at the Plaza Hotel in New York. It is promised for release in April, 1984.
- **Borland International releases Turbo Pascal** for CP/M and 8086-based computers.
- IBM announces the IBM PCjr, using Intel's 8088, for US\$700 for the bare configuration. Code name during development was Peanut.
- Quote from Spinnaker Software chairman William Bowman:
"We're just sitting here trying to put our PCjrs in a pile and burn them. And the damn things won't burn. That's the only thing IBM did right with it - they made it flameproof."

- Microsoft officially releases Microsoft Word 1.0, for US\$375, or US\$475 with the Microsoft Mouse.
- Apple Computer introduces the redesigned Apple III as the Apple III+, for US\$3000.
- Apple unveils the new Macintosh to the press.
- Microsoft marketer Rowland Hanson convinces Bill Gates to change the name of Interface Manager to Windows.
- IBM and Microsoft begin co-developing OS/2. [38]
- Dan Silva and others leave Xerox, to form Electronic Arts.
- Franklin shows an operating Franklin Ace 1200 Apple II compatible at the CP/M '83 Show. It features an 8-bit processor, 128KB RAM, color display, upper/lower-case keyboard, 143KB floppy drive, CP/M card, 80-column text card, for US\$2200.
- In its first year, Compaq Computer sells 47,000 computers, worth US\$111 million.
- George Tate, of Ashton-Tate, buys all rights to dBase II from Wayne Ratcliff, and hires him as head of development for dBase III.

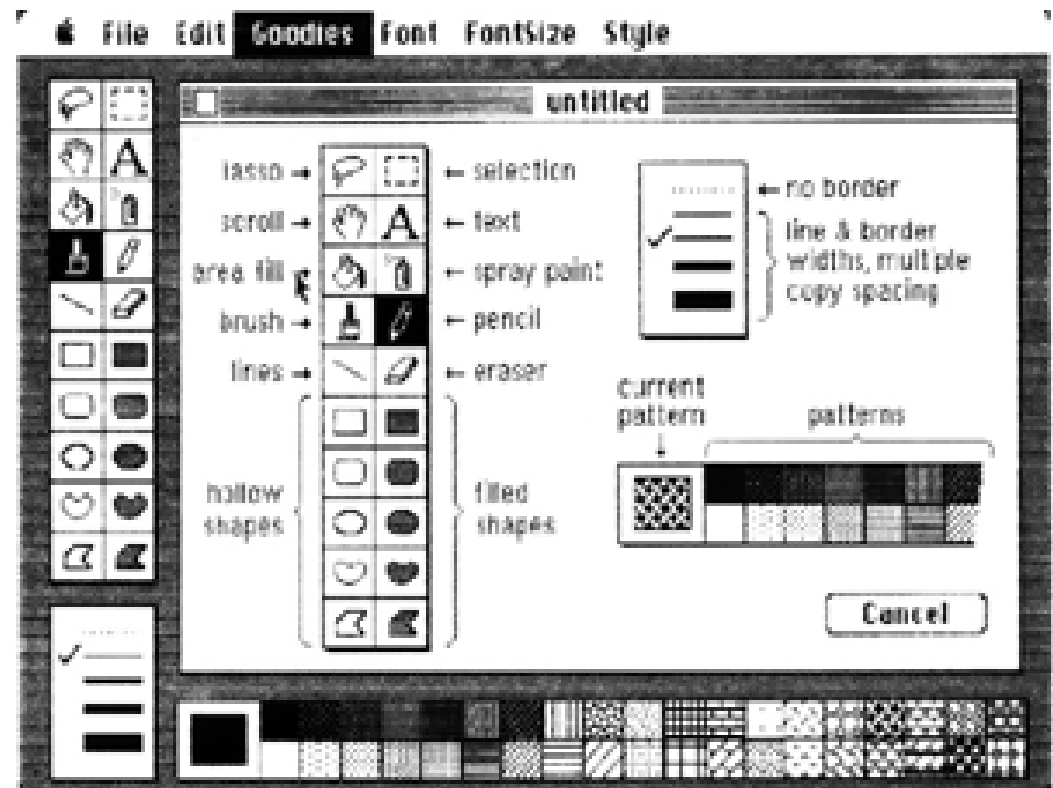
- Borland International is founded by Philippe Kahn.
- Microsoft shows IBM a raw version of Windows. IBM is not interested as they are already developing what would be called TopView.
- Novell introduces the NetWare network operating system for the IBM PC.
- **Bjorne Stroustrup creates the C++ extension to the C programming language.**

1984 main highlights

- **Apple Computer launched the Macintosh**, the first successful mouse-driven computer with a graphic user interface, with a single \$1.5 million commercial during the 1984 Super Bowl.
- **The 3 1/2-inch "microfloppy" diskette** won widespread acceptance, aided by Apple Computer's decision to integrate its use into the new Macintosh.
- **IBM released its PC Jr. and PC-AT**. The PC Jr. failed, but the PC-AT, several times faster than original PC and based on the Intel 80286 chip, claimed success with its notable increases in performance and storage capacity, all for about \$4,000.
- In his novel "Neuromancer," William Gibson coined the term "**cyberspace**." He also spawned a genre of fiction known as "cyberpunk" in his book, which described a dark, complex future filled with intelligent machines, computer viruses, and paranoia.
- **GNU** project launched
- **X-Window** system started in MIT

1984: Apple Macintosh

- Apple Computer's Steve Jobs introduces the **Apple Macintosh** at the Flint Center of DeAnza College in Cupertino, California. The Macintosh uses the 8-MHz 32-bit Motorola 68000 CPU, built-in 9-inch B/W screen, 512x342 graphics, 400KB 3.5-inch floppy disk drive, mouse, 128KB RAM, and weighs 20 pounds. Price: US\$2500.



1984: Apple Macintosh

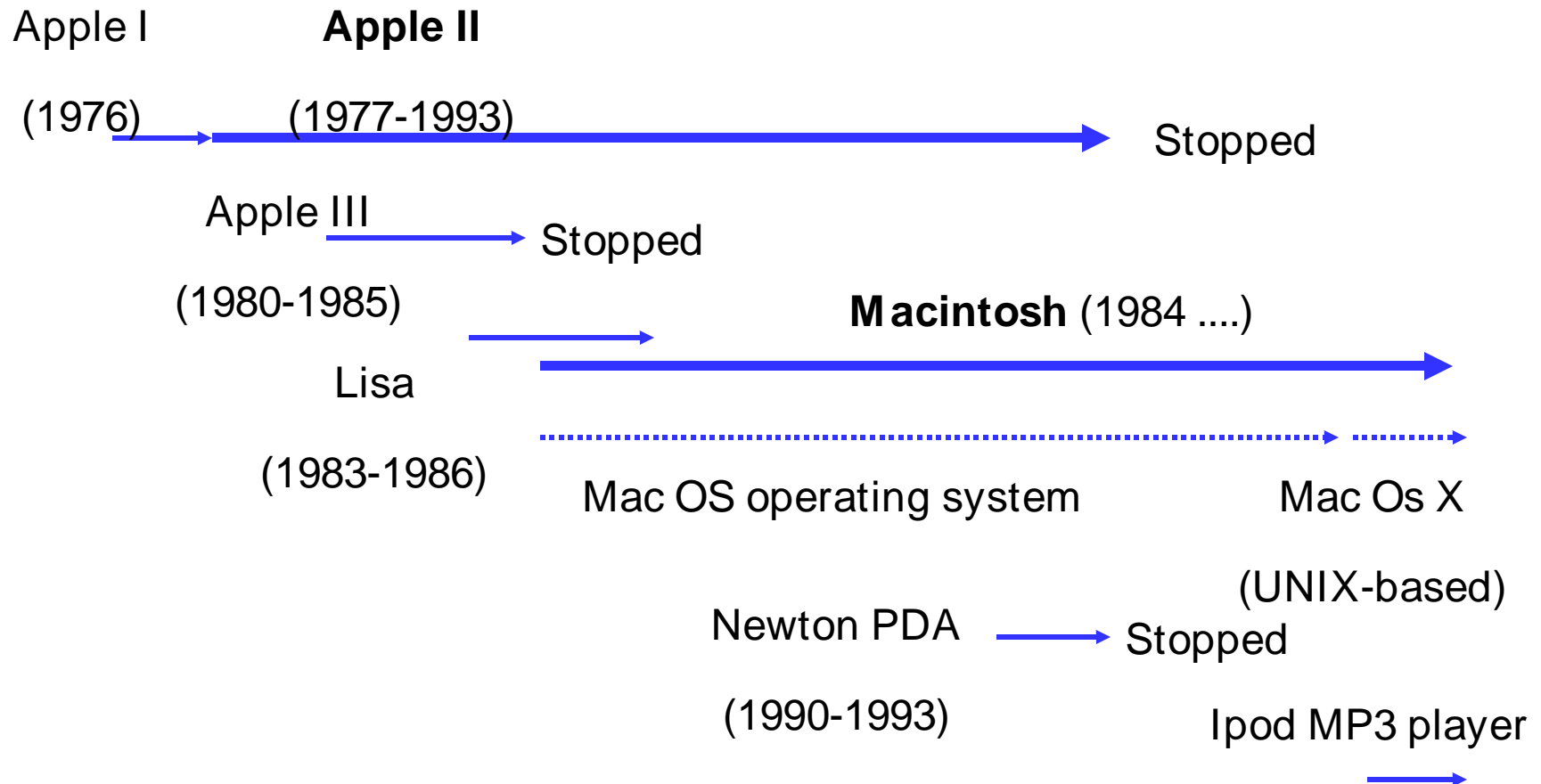
- Apple Computer launched the Macintosh, the first successful mouse-driven computer with a graphic user interface, with **a single \$1.5 million commercial during the 1984 Super Bowl.**
- " On January 24th, Apple Computer will introduce Macintosh. And you will see why 1984 won't be like "1984."



- IBM ships the IBM PCjr. It uses the 8088 CPU, includes 64KB RAM, a "Freeboard" keyboard, and one 5.25-inch disk drive, no monitor, for US\$1300.
- 74 days after the introduction of the Macintosh, 50,000 units have been sold.
- Apple Computer unveils the Apple IIc with an intense publicity extravaganza, at the Moscone Center in San Francisco. Priced at US\$1300, 2,000 dealers place orders for more than 52,000 units on the day of its introduction. The IIc uses a 65C02A microprocessor, 128KB RAM, weighs 7.5 pounds, includes a 3.5-inch floppy drive, supports 40- or 80-column screens, and allows both QWERTY and Dvorak keyboard layouts.
- Apple Computer retires the Apple III and Apple III+, with only 65,000 units sold in total.

Apple product lines: overview

- Two main lines: **Apple II** and **Macintosh**
- Develop **BOTH hardware and software** (operating system and other important modules used by all external programmers)



- Microsoft's Bill Gates and Steve Ballmer write an internal applications strategy memo on the company's commitment to the GUI, on the Macintosh and for Windows.
- Ashton-Tate ships dBase III.
- Six months after its introduction, 100,000 Macintosh computers have been sold.
- **IBM announces the PC AT**, a 6MHz 80286 computer using PC-DOS 3.0, a 5.25-inch 1.2MB floppy drive, with 256KB or 512KB RAM, optional 20 MB hard drive, monochrome or color monitor. Price ranges from US\$4000-6700, depending on configuration.
- IBM introduces PC/IX, based on UNIX System III from AT&T, for the PC AT.
- **IBM announces TopView, a DOS multitasking program.**
- Apple Computer introduces the Macintosh 512K for US\$3200. It uses an 8-MHz 68000 processor, and comes with 512 KB RAM, and a 400 KB 3.5-inch floppy drive.

- Microsoft gives a demonstration of the final version of Windows to IBM. For the third time, IBM is not interested.
- **The number of hosts on the Internet reaches 1000.**
- Lotus Development officially announces Jazz for the Macintosh, an all-in-one program incorporating a spreadsheet, database, graphics, word processing, and communications.
- The 2 millionth Apple II computer is sold.
- **Sierra On-Line releases the game King's Quest.**
- **Apple Computer releases AppleWorks**, one of the first integrated software packages, with modules for word processing, database management, and spreadsheet calculations. It was written by Rupert Lissner.
- Hewlett-Packard introduces the **LaserJet laser printer**, featuring 300dpi resolution, for US\$3,600.
- Foxbase releases Foxbase for MS-DOS.
- MIPS Computer Systems is founded (a spinoff from SGI), and begins developing its RISC architecture.

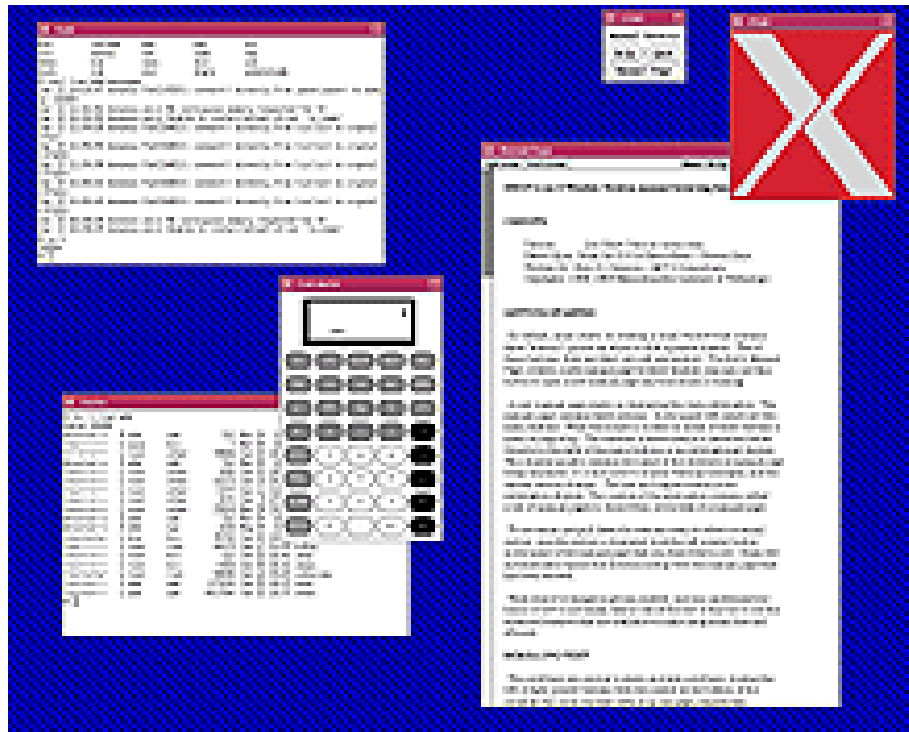
1984

- Sun Microsystems co-founder Vinod Khosla resigns.
- **Scott McNealy is appointed president of Sun Microsystems.**
- subLogic releases Flight Simulator for the Commodore 64.

- **Richard Stallman launches the GNU Project**, to develop the **free operating system GNU** (anacronym for ``GNU's Not Unix"), and thereby give computer users the freedom that most of them have lost. GNU is free software: everyone is free to copy it and redistribute it, as well as to make changes either large or small.



- The Massachusetts Institute of Technology (MIT) begins developing the **X Window System**. X is the basic window system for almost all UNIX machines nowadays.



1985: Main highlights

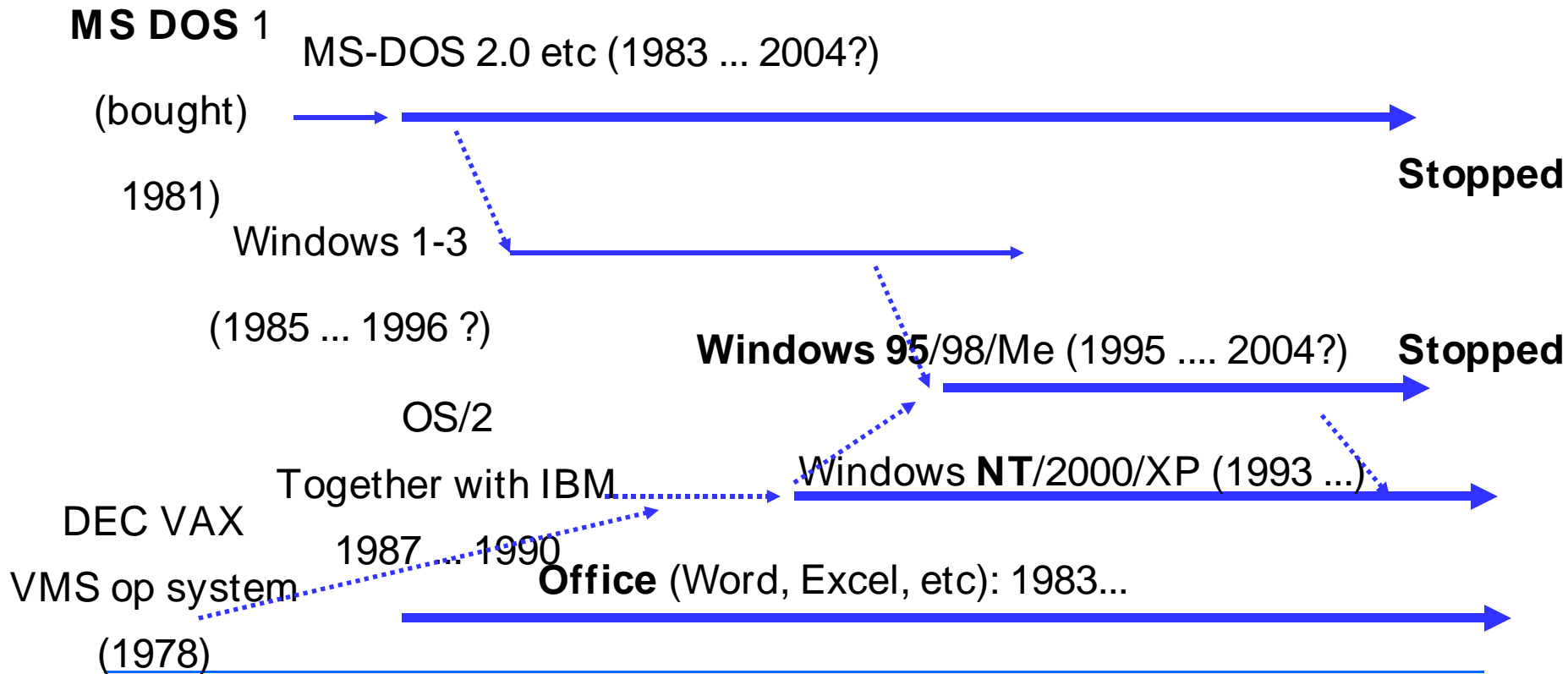
- **The modern Internet gained support** when the National Science foundation formed the NSFNET, linking five supercomputer centers at Princeton University, Pittsburgh, University of California at San Diego, University of Illinois at Urbana-Champaign, and Cornell University.
- Able to hold 550 megabytes of prerecorded data, the new **CD-ROMs grew out of regular CDs** on which music is recorded.
- The **C++** programming language emerged as the dominant object-oriented language in the computer industry when Bjarne Stroustrup published "The C++ Programming Language."
- **Free GNU Emacs 15.34** released by Richard Stallman

- IBM announces that it will cease production and promotion of the IBM PCjr.
- The Macintosh XL (formerly called Lisa) is dropped from Apple Computer's product line.
- Apple Computer's board of directors approves John Sculley's decision to remove Steve Jobs as head of the Macintosh division.
- Apple Computer president John Sculley essentially fires Steve Jobs at Apple Computer.
- Microsoft introduces Microsoft Excel for the Macintosh, in New York.
- Lotus Development releases Lotus Jazz for the Macintosh, for US\$595.
- Microsoft demonstrates Microsoft Windows at Spring Comdex. Release date is set for June, at a price of US\$95.
- Apple Computer reports its first quarterly loss.

- **Microsoft and IBM sign a joint-development agreement** to work together on future operating systems and environments.
- Apple Computer co-founder Steve Jobs resigns from Apple Computer.
- Steve Jobs and five senior managers of Apple Computer Inc. found **NeXT** Incorporated.
- Microsoft ships Microsoft Windows 1.0, for US\$100. It is delivered two years after the initial announcement of the product
- **Broderbund** releases Karateka for the Commodore 64.
- Steve Jobs sells 4 million shares of Apple Computer, netting about US\$70.5 million. If he had held them to the fall of 1987, they would have brought US\$481 million.
- **U.S. Robotics** introduces the **Courier 2400 modem**.
- Intel introduces the **80287** math coprocessor.
- **Microsoft purchases all rights to DOS** from Seattle Computer Products for US\$925,000.
- Sun Microsystems begins work on its **SPARC** processor.
- Microsoft releases QuickBASIC 1.0.

Microsoft main product lines: overview

- Main lines: **progr languages, MS-DOS, Windows, NT/2000/XP, Office**
- Develop **software** (hardware: mouse, Xbox, etc are much less important) for **IBM PC clones** and (Office, Basic) for **Apple**
Basic, (Fortran), (Cobol), **C**, C++, C# etc interpreters and compilers: 1975 ...



- David Miller of AT/T Bell Labs patented the optical transistor, a component central to digital optical computing.
- Daniel Hillis of **Thinking Machines Corp.** moved artificial intelligence a step forward when he developed the controversial concept of massive parallelism in the **Connection Machine**.
- **IBM and MIPS** released the first **RISC-processor-based workstations**, the PC/RT and R2000-based systems.
- **Compaq beat IBM to the market** when it announced the Deskpro 386, the first computer on the market to use Intel's new 80386 chip, a 32-bit microprocessor with 275,000 transistors on each chip.

- Motorola unveiled the **68030 microprocessor**.
- Sun unveiled the **Sparc** microprocessor, based on RISC ideas.
- IBM introduced its **PS/2 machines**, which made the **3 1/2-inch floppy** disk drive and video graphics array (**VGA**) standard for IBM computers.
- Apple engineer William Atkinson designed **HyperCard**, a software tool that simplifies development of in-house applications. HyperCard was one of the inspirations for the web browser, which came in 1990.

Side note: CISC vs RISC processor architectures

- **CISC:** complex instruction set computer (Intel, motorola 68000 series, ..)
 - A large number of instructions, most are relatively slow
- **RISC:** reduced instruction set computer (PowerPC, Sparc,)
 - A small number of instructions, all are very fast
- In practice, CISC and RISC ideas converge in newer processors

1987: GCC, the main C compiler nowadays

- **GCC** version 1.0 released by **Free Software Foundation** founder **Richard Stallman**.
- GCC once stood for **GNU C Compiler**, since it was used to compile programs written in the C programming language for Stallman's "**GNU's Not Unix**" (GNU) effort to create a clone of Unix. Now, though, because GCC accepts programs written in many other languages as well, GCC stands for **GNU Compiler Collection**.
- GCC is the main compiler used on all kinds of UNIX-es, and several ports of GCC (cygwin, djgpp) are highly popular on MS Windows as well
- Ported to a very large number of processors
- Compiles: C, C++, Objective C, Fortran, Java, Ada, (Pascal)

- Apple cofounder Steve Jobs, who left Apple to form his own company, unveiled the **NeXT** workstation.
- Compaq and other PC-clone makers developed enhanced industry standard architecture -- better than microchannel and retained compatibility with existing machine (**ISA**).
- **Pixar's "Tin Toy"** became the first computer-animated film to win an Academy Award, taking the Oscar for best animated short film. Pixar was founded by Jobs.
- **Robert Morris' worm flooded the ARPANET.** Then-23-year-old Morris, the son of a computer security expert for the National Security Agency, sent a nondestructive worm through the Internet, causing problems for about 6,000 of the 60,000 hosts linked to the network.

- Intel released the **80486** microprocessor and the **i860** RISC/coprocessor chip, each of which contained more than 1 million transistors.
- Motorola announced the **68040** microprocessor, with about 1.2 million transistors.
- Maxis released **SimCity**, a sophisticated video game that helped launch a new genre, the simulation.
- **AOL** (America Online) network service launched for Macintosh and Apple II (MS Windows version appears in 1993). The company - Quantum Computer Services – was created in 1985, by Steve Case,
initially running internet services (games, email, chat, news) for the Commodore 64 machines using dial-up.
AOL provided access to the Internet, and, in addition, offered access to its own online information and services tailored to average Americans.
NB! In the initial years of AOL there was no WWW or HTML.